REMARKS

Applicants note that Claims 12-14, which remain under consideration in this application, have not been rejected on prior art grounds. Accordingly, it is believed that Claims 12-14 are considered to distinguish over the cited prior art. Accordingly, the following remarks are directed to the formal grounds of rejection, with brief consideration given to the cited Hashimoto and Menis et al patents.

Claims 12-14 have been rejected under 35 U.S.C. §112, second paragraph for failing to particularly point out and distinctly claim the invention, based on a number of formal issues cited by the Examiner. In particular, the Examiner has questioned the relationship between the preamble and the body of the claims, as well as the meaning of the word "screen" as used in Claim 12. In addition, the Examiner has also indicated that it is unclear how the claimed elements are interrelated and associated with an engine control device. In response to these grounds of rejection, Applicants have amended Claim 12 in a manner which addresses and is believed to resolve each of the cited formal issues.

First, Applicants will provide a brief explanation of the term "screen" as used in the application papers, since an understanding of that term will facilitate resolution of the remaining issues. As noted in the specification at paragraphs [0029], [0030], [0032] and [0037]-[0038], the screening process in this case amounts to checking the integrated circuit to detect latent defects, which may not be apparent when the integrated circuit is initially operated at its normal

operating voltage. For this purpose, as noted at paragraphs [0029] and [0037]-[0038], a voltage higher than the normal operating voltage is applied to the integrated circuit, and thereafter, the characteristics of the circuit are checked to detect any failures which have occurred as a result. Only those devices which have experienced no failures are provided to an actual engine control device.

As noted in paragraph 3 of the Office Action, previously, when chips were encased in a protective package prior to mounting on a circuit board, they were screened after having been encased in the package. Thus, defective circuits were removed prior to mounting of the chip on the circuit board. However, more recently, semiconductor integrated circuits are mounted on the circuit board in bare chip form (without being enclosed in a package) in order to reduce mounting size or area and to improve electrical characteristics, as well as to reduce manufacturing costs. However, with such a manufacturing technique, it is inefficient to attempt to individually screen each integrated circuit in bare chip form before it is mounted on the circuit board. Accordingly, the present invention provides an apparatus which includes circuitry for screening integrated circuits in bare chip form on a circuit board. (See paragraphs [0003]-[0006].)

Referring to Figure 1, the voltage output by the constant voltage source 100 is generated by comparing the voltage at connecting point 103 between resistors 101 and 102 with a reference voltage 104, and the output voltage is controlled by feedback control in order to assure a constant voltage at the output bus 110. Thus, if the voltage at the connecting point 103 is reduced, the feedback

circuitry in the constant voltage source will increase the output voltage on the output bus 110. For this purpose, the invention provides a third resistor 106, which is connectable in parallel with the resistor 102 via a switch 105. When the switch 105 is closed, the effective resistance between the connecting point 103 and ground decreases, thereby decreasing the voltage at point 103, and resulting in an increase in the output voltage 110. As noted previously, such an increase is used in order to detect any latent failures in the integrated circuits 111-113, which may not otherwise be apparent initially at normal operating voltages. In this manner, the integrated circuits 111-113 are "screened" by applying the higher voltage to them.

Claim 12 now clearly recites these features of the invention. In particular, the preamble of Claim 12 has been amended to recite an engine control device "having screening apparatus for checking for latent defects in integrated circuit elements contained therein". Furthermore, the second paragraph of the body of Claim 12 has been amended to recite that the integrated circuit is provided "for processing engine control information", thereby relating the apparatus defined in the body of the claim to the preamble. Finally, the manner in which the electric power with a rated voltage is generated is recited in the first paragraph of the body of Claim 12, and the last paragraph of Claim 12 has been amended to define the relationship between operation of the switch 105 and the change of the output voltage generated by the voltage source. Accordingly, Applicants respectfully submit that Claim 12 is now clear and definite; that the relationship between the preamble and the body of the claim has been clarified; and that the

manner in which the elements recited in the body of Claim 12 cooperate in order to achieve the function set forth in the preamble has been recited. Accordingly, reconsideration and withdrawal of this ground of rejection are respectfully requested.

Claims 12-14 have been further rejected under 35 U.S.C. §112, first paragraph based on the Examiner's observation that the specification appears to lack sufficient support showing the details of how the integrated circuit is screened. Applicants believe, however, that this matter has been resolved by the explanation provided above. In particular, the portions of the specification referred to previously clearly set forth the details of how the screening or checking of the integrated circuits is performed, by operating them at an elevated voltage, and subsequently checking their characteristics to detect latent defects. Therefore, reconsideration and withdrawal of this ground of rejection is also respectfully requested.

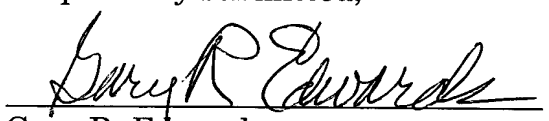
The Hashimoto reference (U.S. Patent No. 6,255,839 B1, cited but not relied on) discloses an integrated circuit tester which measures a leakage current of the integrated circuit by adding a current detecting resistor on an output side of the integrated circuit. This reference, however, contains no disclosure which teaches or suggests screening of an integrated circuit by adding a higher voltage than the rated voltage by comparing a reference voltage with a voltage derived from the electric power output by a voltage source, as recited in Claim 12.

Menis et al (U.S. Patent No. 5,200,696, cited but not relied on) discloses a test system to measure the characteristics of a "device under test" (DUT). However, like Hashimoto et al, it also fails to teach or suggest the particular circuitry defined in Claim 12, which includes means for varying the voltage applied to an integrated circuit in the context of an engine control device, in order to detect latent defects, in the manner recited. Accordingly, neither Menis et al nor Hashimoto teaches or suggests the present invention.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #381NP/49131).

Respectfully submitted,



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